

ABSTRACT

A method for producing a substrate with black film includes forming a dull plating film on a surface of a substrate, forming an electroless plating film containing a sulfur or nitrogen compound on the surface of the plating film, and forming a black film on the surface of the electroless plating film. This substrate with black film is used for devices which generate heat due to sliding or friction or generate/accumulate heat due to a chemical reaction, such as a semiconductor device, vacuum device, rotating device and heat exchanger, and the black film has excellent heat radiating properties with an emissivity of 0.8 or more. Also, this substrate with black film has high corrosion resistance against halogen-type corrosive gases and exhibits excellent release gas properties and corrosion resistance in vacuum devices.